1. (normative)
Mechanism user manual (MUM) - DRD
	1. DRD identification
		1. Requirement identification and source document

This DRD is called from ECSS-E-ST-33-01, requirement 4.10c.

* + 1. Purpose and objective

The purpose of the mechanism user manual (MUM) is to provide the customer with a comprehensive set of information and instructions for storage, transportation, handling, integration at subsystem or system level, and on ground and in-orbit operation of the mechanism.

1. Operational information and instructions provided by the mechanism supplier are limited to mechanism level.
	1. Expected response
		1. Scope and content

Introduction, references and terminology

The user manual shall contain a description of the scope and applicability of the document.

1. For example: This document provides all information and instructions for storage, transportation, handling, integration at subsystem or system level, and on ground and in-orbit operation of the “name” mechanism for the “name” project.

The user manual shall include:

the mechanism requirement specification;

the delivered mechanism applicable CIDL;

the list of consumables and spares;

the list of GSE and special tools;

the list of user manuals for GSE and special tools;

the calibration data.

The user manual shall include any additional definitions, abbreviations or symbols used.

Mission and mechanism main functions

The user manual shall describe the mission and the role of the mechanism in achieving the mission.

The primary functions of the mechanism shall be described.

Safety instructions

The user manual shall present all aspects with regard to personnel safety and detail all necessary safety precautions.

Traceability requirements

The user manual shall define the information to be recorded after delivery.

1. For example: Number of limited operations.

Delivery configuration

The user manual shall present the following information regarding the mechanism delivery configuration:

short description of the mechanism and all self-standing subassemblies;

short description of GSE and special tools, including drawings or pictures.

The description specified in D.2.1<5>a shall include drawings or pictures.

Storage, transportation and handling

The user manual shall describe the following topics:

mechanism configuration for storage, transportation and handling;

container characteristics and operation instructions;

packing, and transportation instructions;

unpacking and incoming inspections;

handling and storage instructions;

environmental conditions for the in D.2.1<6>a.1.to D.2.1<6>a.5. defined phases.

1. Examples of such environmental conditions are mechanical, thermal, hygrometry, and pressure, cleanliness.

Interfaces definition

The user manual shall provide the following information with regards to interfaces definition:

description of mechanical and thermal interfaces, including the list of applicable mechanical and thermal ICD;

description of electrical interfaces, including the list of applicable electrical ICD;

description of optical interfaces, including the list of applicable optical ICD.

1. In case the ICDs are provided in a specific chapter of the EIDP, the list of applicable ICDs can be limited to the EIDP chapter reference.

Integration instructions

The user manual shall provide the following information with regards to integration instructions:

integration sequence;

preparation prior to integration, including

mechanism and self-standing subassemblies configuration;

GSE and special tools to be used;

items to be removed;

specific precautions and safety instructions;

cleaning instructions;

environmental conditions for integration;

detailed handling instructions for integration.

step by step mounting instructions including torque on threaded fasteners, alignment provisions, shims, electrical connections, intermediate inspections and checks;

final inspections.

1. For example, visual, electrical checks, clearances, and health checks.

Onground operation instructions

The user manual shall describe all activities to operate the mechanism on ground, including:

Preparation for start up:

operational configuration;

GSE and special tools to be used;

items to be removed;

specific precautions and safety instructions including limitations in terms of operation and performances;

cleaning instructions;

environmental conditions for operation.

Step by step Start up operation instructions.

For each operational mode

operational configuration;

GSE and special tools to be used;

specific precautions and safety instructions including limitations in terms of operation and performances;

environmental conditions for operation;

step by step operation instructions;

telemetry requirements and health monitoring;

recovery contingencies.

1. Example of such operational modes are release, calibration, deployment, and pointing, scanning.

Maintenance operations

The user manual shall describe all maintenance operations.

1. For example:
* Time limited consumables replacement
* Cycles limited consumables replacement
* Periodic health check
* Periodic operations

In-orbit operation instructions

The user manual shall describe all activities to operate the mechanism in-orbit.

For each operational mode the following topics shall be described:

operational configuration;

specific precautions including limitations in terms of operation;

operation sequence;

telemetry requirements and health monitoring;

recovery contingencies.

1. Examples of such operational modes are release, calibration, deployment, pointing, and scanning.
	* 1. Special remarks

None.